CLAIMS

WE CLAIM:

1. A method of inducing a permanent change in the neurological development of a rodent, comprising treatment of a rodent during the second postnatal week with low doses of a kainate receptor agonist, wherein after treatment with said kainate receptor agonist the rodent exhibits reproducible seizure-like symptoms when exposed to a mild to moderate stressor that would not normally elicit a seizure.

2. A method according to claim 1, wherein the treatment comprises administration of the kainate receptor agonist each day for a period extending from about postnatal day 8 to about postnatal day 14.

3. A method according to claim 2, wherein the kainate receptor agonist is selected from the group consisting of domoic acid and kainic acid.

4. A method according to claim 1, wherein the rodent is a rat, and the treatment comprises administration of the kainate receptor agonist each day for a period extending from about postnatal day 8 to about postnatal day 14.

5. A method according to claim 4, wherein the kainate-receptor agonist is domoic acid and the domoic acid is administered subcutaneously in a single daily dose ranging from about 5 to 50 μg/kg.

6. A method according to claim 4, wherein the kainate-receptor agonist is domoic acid and the domoic acid is administered subcutaneously in a single daily dose ranging from about 5 to 20 μg/kg.

7. A method according to claim 4, wherein the kainate receptor agonist is kainic acid and the kainic acid is administered subcutaneously in a single daily dose ranging from about 10 to 100 µg/kg.

8. A method according to claim 4, wherein the kainate receptor agonist is kainic acid and the kainic acid is administered subcutaneously in a single daily dose ranging from about 20 to 50 µg/kg.

9. A rodent which has been treated with low doses of a kainate receptor agonist during the second postnatal week, resulting in a permanent change in the neurological development of said rodent, wherein the rodent exhibits reproducible seizure-like symptoms when exposed to a mild to moderate stressor that would not normally elicit a seizure.

10. A rodent according to claim 9, wherein said treatment comprises administration of the kainate receptor agonist each day for a period extending from about postnatal day 8 to about postnatal day 14.

11. A rodent according to claim 10, wherein said kainate receptor agonist is selected from the group consisting of domoic acid and kainic acid.

12. A rodent according to claim 9, wherein the rodent is a rat and the treatment comprises administration of the kainate receptor agonist each day for a period extending from about postnatal day 8 to about postnatal day 14.

13. A rodent according to claim 12, wherein the kainate-receptor agonist is domoic acid and the domoic acid is administered subcutaneously in a single daily dose ranging from about 5 to 50 µg/kg.

14. A rodent according to claim 12, wherein the kainate receptor agonist is kainic acid and the kainic acid is administered subcutaneously in a single daily dose ranging from about 10 to 100 µg/kg.

15. A rodent according to claim 9, wherein the mild to moderate stressor is selected from the group consisting of novel environments, low dose chemical convulsants, audiogenic stimuli and temperature stress.

16. A rodent according to claim 9, wherein the mild to moderate stressor is a novel environment selected from the group consisting of the Morris Water Maze (MWM), the Novel Water Maze (NWM), or an open field arena.

17. A rodent according to claim 9, wherein the seizure-like symptoms are characterized by a combination of abnormal behaviours including hunched body posture, facial clonus, mastication with tongue-protrusion, repetitive head extensions and bobbing, repetitive eye blinking/squinting and vibrissae and ear twitching.

18. A rodent according to claim 12, wherein in adulthood said rodent exhibits elevated serum oxytocin concentrations and increased expression of hippocampal brain-derived neurotrophic factor (BDNF), with no significant increase in neuropeptide Y (NPY) expression levels.

19. Use of a rodent as defined in claim 9, for studying the efficacy of a compound or pharmaceutical preparation for treating epilepsy or other seizure-related disorders.

20. A method of assaying the anti-epileptic efficacy of a compound or pharmaceutical composition, wherein said method comprises:

- administering a compound or pharmaceutical composition postulated as having potential as an agent for treating epilepsy or other seizure-related disorders to a rodent of claim 9,
- exposing said rodent to a form of mild to moderate stress, and
- measuring the rate of occurrence and/or severity of any seizure induced in said rodent by exposure to said stress,

wherein a decreased rate of occurrence and/or severity of seizure is associated with anti-epileptic efficacy of the compound or pharmaceutical composition.